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A.D. 1874, 5th JUNE. N° 1959.

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SPECIFICATION

OF

WILLIAM HENRY HUGHAN.

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TREATMENT OF SEWAGE, &c.

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LONDON:

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## Treatment of Sewage, &c.

*(This Invention received Provisional Protection only.)*

PROVISIONAL SPECIFICATION left by William Henry Hughan at the Office of the Commissioners of Patents, with his Petition, on the 5th June 1874.

I, WILLIAM HENRY HUGHAN, of Southport, in the County of Lancaster, do hereby declare the nature of the said Invention for “IMPROVEMENTS IN THE TREATMENT OF SEWAGE, NIGHT SOIL, AND TOWNS REFUSE AND LIKE MATTERS TO UTILIZE THEM AS MANURE, AND IN THE PRODUCTION OF AN ARTIFICIAL FUEL TO BE EMPLOYED IN THE SAID TREATMENT AND FOR OTHER PURPOSES,” to be as follows :—

10 The Invention is herein-after explained in three divisions as it relates to sewage, night soil, and fuel. I throw into waterclosets or at convenient places, into the sewers or into sewage tanks, a preserving powder which prevents decomposition and the formation of any gaseous compounds, and which I will call the sanitary powder herein-after  
15 described, and when thoroughly mixed with the sewage in which the powder partially dissolves, I use a second powder which I will name the precipitating powder prepared as herein-after described, which causes the manurial products of the sewage to be precipitated. The water is next



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*Hughan's Improvements in the Treatment of Sewage, &c.*

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subjected to downward filtration through sand or other filtrating beds, and the precipitate or residuum obtained from the precipitation and filtration is mixed with hot superphosphate manufactured in the usual manner, and run liquid out of the mill until the said residuum is of a thick consistency. In twenty-four hours (or less) the whole becomes a united dry mass, and thus forms sewage phosphate manure or night soil phosphates. 5

The sanitary powder is made of Portland cement or like material, sulphates of soda, magnesia, and potash, mixed in oil, (mineral oil such as paraffine or petroleum being preferred), until of the consistency of 10 mortar, the mixture being then decomposed with sulphuric acid until the whole is well boiled together, and when dry is then ready for use.

I also manufacture a powder possessing all these elements from cheap sources, such as kainit and seaweed. I boil seaweed, clay, (china preferred) and soda waste, all reduced to fine pulp until thoroughly 15 saponified, and then treat the mass with sulphuric acid. The resulting mixture will be the sanitary powder. The precipitating powder is formed of Portland cement or like material with a little fluor spar mixed, soaked, or set in oil (by preference mineral or the oil distilled from the carbonisation of coal ashes herein-after described), until 20 indurated for about three days and then powdered.

I now come to the second division, night soil. A dry closet powder is made from the carbonisation of coal ashes. They are carbonised in gas revolving retorts, the gas and oil being carefully collected. The cinders are then separated and the black ash portion is the powder for the closets. 25 When these powdered closets are emptied at the manufactory the contents are mixed with the following animal cement powder:—

Farmyard manure such as stable, cow, or other manure (or rich street sweepings or seaweed), is triturated in a mortar mill with diluted sulphuric acid (or plaster of Paris), and further incorporated with clay, 30 and quartz or sea sand until of a consistency that enables the mass to be formed into bricks. The bricks are then dried upon a flue and when ready for handling are carried to the retorts afore-mentioned, in which they are calcined, closed from the air until the oil is collected, and then burnt open as cement until all the charring has disappeared. When 35 crushed this animal cement powder with its oil is mixed with the dry

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closet powdered contents, the resulting mixture after digestion forming a rich nitrate manure.

A cheap fuel is required for the processes of my Invention, and when the cinders and gas obtained in the before-mentioned manufacture are  
5 not sufficient, I produce a fuel by mixing peat, pulp, sand, and clay with hot Yorkshire lime (or of like constitution), (I prefer sea sand or quick-sand, the silica being semi-soluble in that condition for this and the other mentioned processes). These materials are mixed and slaked in closed vessels strong enough to resist the slaking pressure, and when cool the  
10 product is the required artificial fuel.

Another recommendation and as a part of the above processes consists in the fact that the ashes of this fuel are a good Portland cement.

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